

CLAIMS

What is claimed is:

1. An injection unit of an injection molding machine, comprising:
 - a housing having an inner diameter;
 - an injection device received in the housing for carrying out axial and rotating movements and including a screw constructed for plasticizing plastic granulate during transport thereof into plastic melt and including a backflow prevention assembly, a plunger for pressing the plastic melt from an accumulation chamber through a nozzle into an injection mold, and a spacer element arranged between the backflow prevention assembly of the screw and the plunger and having a length corresponding at least to a stroke of the injection device, with the spacer element having a first flow channel for establishing in each position of the injection device a fluidic communication with a second flow channel which initially extends radially outwards and then parallel to a movement and guide area of the plunger to an area between the nozzle and the plunger; and
 - a mixing and metering device embracing the plunger at least partially in a circular ring shaped manner for mixing and metering plastic melt and including an inlet for introduction of an additive, wherein the second flow channel extends through the mixing and metering device adjacent to the movement and guide area of the plunger, said mixing and metering device being in driving relationship with the injection device and including a

rotatable tube in fixed rotative connection with the plunger, and a plurality of mixing elements arranged on the tube and on the inner diameter of the housing.

2. The injection unit of claim 1, wherein the additive is at least one element selected from the group consisting of colorant, foaming agent and lubricant.
3. The injection unit of claim 1, wherein a first plurality of the mixing element is secured to the rotatable tube and a second plurality of mixing elements is secured to the inner diameter of the housing, said first and second pluralities of mixing elements having different surface configurations in opposite relationship.
4. The injection unit of claim 3, wherein the surface configurations include toothed surfaces.
5. The injection unit of claim 1, wherein the spacer element includes a continuously tapered shaft which is surrounded by a circular ring shaped flow channel defined between the shaft and the housing and fully available for transport of plastic melt from the screw to the mixing and metering device.

6. The Injection unit of claim 1, wherein the spacer element includes a tapered shaft which is surrounded by a circular ring shaped flow channel defined between the shaft and the housing and having a cross section which narrows slightly conically from the screw to the plunger, and further comprising an aperture ring disposed in the housing at slight distance to the plunger for reducing a cross section of the circular ring shaped flow channel, wherein the shaft has a plunger-proximal end formed with a ring-shaped constriction and is provided with at least one axial throughbore to connect a flow channel, which extends out from the screw, with the constriction of the shaft, for establishing a fluidic communication between the throughbore and the circular ring shaped flow channel.
7. The injection unit of claim 1, and further comprising an intermediate component disposed between the nozzle and the housing to extend the accumulation chamber in axial direction, wherein the plunger is provided on a nozzle-proximal side with a tapered shaft for expulsion of plastic melt from the accumulation chamber.